

## The Camera Obscura

One of the most interesting facts about photography is that cameras and lenses were invented hundreds of years before photography itself was invented. The first cameras were called **camera obscuras**. They were designed around the phenomenon of pinholes, which can project upside down and backward images onto a surface. Because light travels in a straight line, when light rays are reflected from a subject or scene through a small hole in thin material, they cross and reform on another surface as an upside-down projected image. This law of optics was known to Chinese scholars as long ago as the fifth century BCE.

These first cameras were used as drawing aids for Western artists in the sixteenth century. The image that an artist wanted to recreate was projected onto canvas or paper and the artist could then trace it, achieving great realism and accurate perspective.

Eventually, lenses from telescopes were modified and adapted in the early seventeenth century to replace

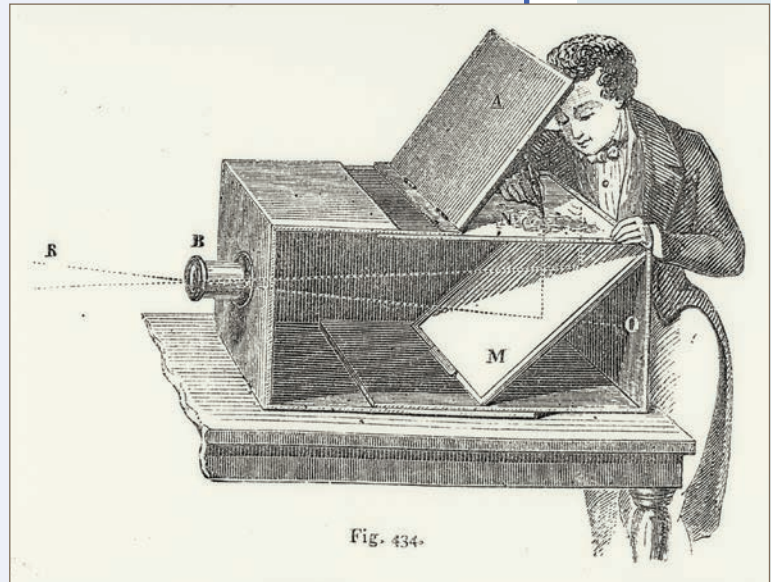


Fig. 1-11. **Look at the path of the light through the camera obscura and the position of the mirror. How do they combine to project an image?**

George Eastman House, *An Early Nineteenth-Century Portable Camera Obscura*.

pinholes in camera obscuras, producing sharper and brighter images. Mirrors were placed in the camera obscura to project the upside-down image right side up onto a ground glass, similar to the workings of today's cameras.



Fig. 1-12. **Image of the ground glass viewing screen in a camera obscura.**

### Teaching Tip

An easy camera obscura can be constructed from a soda can. Open the can, drain the contents, wash, and let dry. With a small nail, make a small hole in the bottom of the can. Cover the opening on the top of the can with frosted transparent tape. Hold the can up to a bright setting and look at the taped area to see the upside-down, reversed image projected from the pinhole.

### Vocabulary

**camera obscura** Latin for "dark room." This was the first camera and was used as a drawing aid for artists. An image was projected onto a ground glass and then traced by the artist.